



**Final Data Summary Report**  
**Soil/Sediment Sampling Results**  
**Pre- Design Sampling**  
**12<sup>th</sup> Street Landfill**  
**Operable Unit #4**  
Allied Paper/Portage Creek/Kalamazoo River Site  
Plainwell, Michigan

Prepared by:

Region 5  
United States Environmental Protection Agency  
77 West Jackson Boulevard  
Chicago, Illinois 60604

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## **1.0 INTRODUCTION**

This Data Summary Report (DSR) presents the results of the Pre-Design soil/residual and sediment sampling study performed on behalf of the United States Environmental Protection Agency (U.S. EPA) by Environmental Design International Incorporated (EDI). This DSR summarizes the field activities that were performed and analytical data that were collected between September 15, 2003 and September 25, 2003. EDI performed sampling activities that included the sampling and analysis of soil and paper residuals in the wetlands and woodlands, and sediments in the former powerhouse discharge channel. The work included collection of 159 soil/residual samples, 34 sediment samples, inclusive of QA/QC samples. U.S. EPA's Field Environmental Decision Support ("FIELDS") Team provided support for the project. The FIELDS Team developed the sample location plan using GIS software and surveyed and flagged the sample locations in the field using GPS equipment.

This Pre-Design sampling was designed to further delineate the polychlorinated biphenyl (PCB) contamination which may have migrated from the landfill into the adjacent wetland, woodland and former powerhouse discharge channel. The following sections summarize the procedures used to collect the samples and the results obtained from the sampling events. The FIELDS Team also used the data from this investigation and previous investigations to develop remediation estimates of soil and sediment surrounding the landfill. Those results are presented in Appendix 1. In accordance with the Record of Decision the cleanup is to be based upon visual contamination. The FIELDS analysis is merely further elucidate the area of contamination. The threshold PCB concentrations used in the analyses are not to be construed as the cleanup standards to be applied at the site. The concentrations used were selected to as representative of the range of threshold criteria recommended by the risk assessments developed for the site. It should be noted that due to access issues, this sampling effort and volume estimates did not address potential contamination on the gravel mining property adjacent to the landfill along the southwest corner of the landfill.

## **2.0 HISTORICAL AND BACKGROUND INFORMATION**

### **Site Location**

The 12<sup>th</sup> Street Landfill (“Landfill”) is Operable Unit 4 of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site. The 12<sup>th</sup> Street Landfill is located in Otsego Township, approximately ½ miles northwest of the City of Plainwell in Allegan County, Michigan. The landfill occupies approximately 6.5 acres and is bordered to the east by the Kalamazoo River, to the north and west by wetlands, to the south and southeast by industrial developed land, and to the south and southwest by a gravel pit operation (see figure 1).

### **General Site Information**

Beginning in 1954, the National Cash Register Company (now NCR Corporation) began manufacturing carbonless paper. NCR’s paper product contained the polychlorinated biphenyl (“PCB”) compound known as Aroclor 1242 as an ink carrier or solvent.

Between the late 1950s and early 1970s, several paper companies doing business along the Kalamazoo River recycled large quantities of NCR’s carbonless copy paper, which required deinking before repulping could occur. The processes of deinking and repulping of the NCR resulted in PCBs either becoming integrated in new paper products or became part of the mills’ waste streams.

NCR ceased manufacturing its carbonless copy paper in 1970. Because some of the PCBs from the carbonless paper remained in the recycled pulp, and subsequently were incorporated into new paper products, the new products made from the pulp contained elevated levels of PCBs until approximately 1989.

The paper mills operating along the Kalamazoo River, including the owners and operators of the Plainwell mill, initially disposed of the paper waste sludge from the mill operations directly into the River. By the mid-1950s, some mills had installed primary clarifiers, and began disposing of the solid wastes in unlined sludge lagoons located adjacent to the River.

The MDEQ became concerned about the presence of PCBs in the Kalamazoo River in 1971, after routine surface water and biota sampling at the mouth of the River indicated that PCBs were discharging to Lake Michigan via the Kalamazoo River, and that these PCBs were widely bioavailable. The Site was listed on the NPL in 1990. According to the NPL Site narrative, the Site originally comprised: 1) the 80 acres of the Allied Paper mill property; 2) a 3-mile stretch of Portage Creek; and 3) a 35-mile stretch of the Kalamazoo River. Shortly after the Site was listed, U.S. EPA and MDEQ agreed to designate the Site as a non-Fund Financed, state enforcement lead site for purposes of the RI/FS. MDEQ negotiated an administrative agreement with three PRPs from the site, pursuant to which these PRPs agreed to conduct an RI/FS. The scope of the Site investigation expanded to include: 1) approximately 80 miles of the Kalamazoo

River from Morrow Lake Dam downstream to Lake Michigan; 2) the adjacent floodplains and wetlands; 3) five paper residual disposal areas; and 4) six paper mill properties.

### **Plainwell Mill Operations and 12<sup>th</sup> St. Landfill Information**

The 34-acre Plainwell mill is the most downstream of all the paper mills along the Kalamazoo River. Between 1954 and 1985, the mill produced approximately 159 tons of paper per day. Until 1962, between 40% and 60% of the “furnish” to the papermaking operations at the mill was virgin pulp. The remaining furnish (40%-60%) was de-inked pulp produced at the mill. The mill de-inked an average of 59 tons per day of paper stock, although the vast majority of the de-inking stock was not NCR paper. In January of 1963, i.e. during the period Weyerhaeuser owned the mill property, de-inking operations were discontinued, and thereafter Plainwell mills’ owners and operators used primarily virgin pulp to make paper.

Between 1955 and 1981, the owners and operators of the Plainwell mill disposed of the waste paper residuals from the papermaking process into the 12<sup>th</sup> St. Landfill, designated by MDEQ as Operable Unit #4. The 6.5-acre Landfill, which is not contiguous with the mill property, is located approximately 1.5 miles northwest of the City of Plainwell in Allegan County, Michigan.

The Landfill is bordered to the east by a former powerhouse discharge channel for the Plainwell Dam, to the north and northwest by marsh areas, to the southeast by vegetated woodlands, and to the west by a gravel mining operation. Erosion along the border of the landfill has resulted in contamination migrating onto these adjacent properties

In 1967 Weyerhaeuser, which became the owner and operator of the Plainwell mill in 1961, constructed a containment berm at the eastern edge of the Landfill to prevent erosion of the paper wastes into the Kalamazoo River. A subsequent mill owner extended the containment berm around the entire Landfill in 1976. The current owner of the Landfill, Plainwell Inc., maintains the paper residuals do not comprise any part of the containment berm and that no erosion has occurred from the 12<sup>th</sup> Street Landfill. MDEQ has data, however, establishing that PCB-contaminated residuals form part of the berm itself. Sampling during the RI also established that paper residuals extend beyond the berm into the adjacent wetland area, as well as in the former powerhouse discharge channel situated beyond the Landfill and the River. The Record of Decision determined that the presence of paper residuals in the powerhouse channel indicate continued erosion of contaminated paper residuals from the Landfill subsequent to construction of the containment berm.

Risk assessments for the River indicate that sensitive aquatic and terrestrial biota have been adversely affected by PCBs in surface water, floodplain soils and river sediment. MDEQ did not develop Landfill-specific human health or ecological risk assessments. In order to assess the risks presented by the Landfill, MDEQ relied extensively on a risk assessment prepared in connection with the State’s 1997 remedial decision for another landfill at the Site, the King Highway Landfill, Operable Unit #3. Both landfills contain the same types of PCB-contaminated paper residuals, with identical exposure routes and receptors. No barriers

currently exist to prevent fauna movement to and from the Landfill, adjacent woodlands, marshes, gravel mining property to the west, or former powerhouse discharge channel. All of these areas have been adversely affected by the release of PCBs from the Landfill.

### **Record of Decision**

On September 28, 2001 Region 5 concurred with the remedy selected by the MDEQ for the 12<sup>th</sup> Street Landfill, Operable Unit #4. The ROD called for the following major components:

- Excavation and relocation into the landfill, contaminated residuals currently in the woodlands, wetlands, and adjacent property, and the residuals in the former powerhouse discharge channel that are contiguous with the eastern side of the landfill
- Excavation and relocation into the landfill of the east side of the landfill along the former powerhouse discharge channel to create a buffer zone between the landfill and the channel;
- Restoration of any areas affected by the remedial action;
- Construction of a sidewall containment system around the outside perimeter of the landfill designed and constructed to prevent the release of PCBs, provides side slope stability, flood protection, and erosion control;
- Construction of a impermeable composite cover (cap) designed to meet the relevant portions of Part 115, Solid Waste Management, of the NREPA to prevent migration of precipitation through the waste and eliminate the direct contact threat. If necessary a landfill gas venting system will be constructed as part of the cover system;
- Long-term groundwater monitoring;
- Short-term surface water monitoring
- Deed restrictions;
- Investigation of the need for , and if necessary design and construction of, a leachate collection system; and,
- Long-term operation and maintenance of the remedy.

On February 2, 2002, Region 5 and MDEQ agreed that U.S. EPA should assume the enforcement

lead for certain areas of the Site, including the 12<sup>th</sup> Street Landfill.

### **3.0 Previous Sampling Activities**

#### **Remedial Investigation Sampling**

In 1993 as part of the Remedial Investigation 62 residual/soil samples were collected within the landfill from a total of 16 test pits, six soil borings, and a buried steel drum, and analyzed for PCBs, VOCs, and SVOCs, inorganic compounds, pesticides, and dioxins and furans. Elevated PCBs were detected in 31 samples, with a maximum concentration of 140 parts per million (ppm). Numerous inorganic compounds, pesticides, VOCs, SVOCs, and dioxins exceeded the relevant cleanup criteria.

Soil/Residual samples were collected from soil and monitoring well borings located outside the landfill perimeter, and from two sediment cores collected in the former powerhouse discharge channel, immediately adjacent to the east side of the landfill. Elevated PCB concentrations were reported in 24 of the 45 samples analyzed, including both samples collected from the channel (SD1 and SD2 had PCB concentration of approximately 17 and 28 ppm, respectively). Appendix 2 includes the PCB analytical results for the samples from the RI. Figure 2 illustrates the maximum PCB values detected at each location. Figure 3 illustrates the approximate extent of visible paper residuals that are contiguous with the landfill.

In 1993, groundwater samples were collected from 15 monitor wells and analyzed for VOCs, SVOCs, inorganic compounds, pesticides, and PCBs. PCBs were not detected and all other results were either non-detect or below cleanup standards with the exception of bis(2-ethylhexyl) phthalate. A second round of samples was collected in 1995. Analyses was limited to PCBs, and results indicated non-detectable concentrations.

Three leachate wells were sampled in 1993 and again in 1995. Analytical results from the 1993 sampling event indicate the presence of trace concentrations of various VOCs, SVOCs, and Aldrin, as well as elevated concentrations of toluene (680 ppb). In 1995 leachate samples were analyzed for PCBs only. Results indicate that leachate collected from leachate well LH-1 had PCB concentrations of 1.4 ppb.

#### **BBL Former Powerhouse Discharge Channel Investigation**

In 2001 Blasland, Bouck and Lee, Inc. ("BBL"), on behalf of the Kalamazoo River Study Group, submitted a work plan to the MDEQ for delineating the extent of PCB-containing paper-making residuals to be extracted from the former powerhouse discharge channel adjacent to the 12<sup>th</sup> Street Landfill as part of an Interim Response Activity (IRA). The work plan was approved by MDEQ on January 31, 2001. The intent of the investigation was to identify the materials within reach of excavation equipment to be extracted from the powerhouse channel. The sampling grid for that sampling had a spacing of 20 feet perpendicular to the channel and 50 feet parallel to the

channel. The grid extended 60 feet into the channel from the west bank and 250 to 300 feet along the east side of the landfill. BBL performed the sampling in February 2001 and the results are presented in Appendix 3. During that sampling it was decided not to analyze sample sediment cores visibly contaminated with paper residuals as it was assumed that those residuals would exceed the cleanup criteria. Therefore, locations 2, 3, 4, and 5 were not analyzed. Twenty eight samples were analyzed for PCBs. Total PCB concentrations ranged from 34 ppm to non-detect

### **Special Notice Letter**

On September 26, 2002 U.S. EPA sent a Special Notice Letter to Weyerhaeuser, the former owner and operator, inviting them to negotiate a Consent Decree for the performance of the Remedial Design and Remedial Action selected in the ROD for the 12<sup>th</sup> Street Landfill. On November 22, 2002 U.S. EPA received a response to the SNL from Weyerhaeuser. In its response letter to the SNL Weyerhaeuser had raised several technical concerns regarding the 12<sup>th</sup> Street Landfill and the selected remedy (Weyerhaeuser 2002). Specifically they claimed data gaps existed in the following areas:

- 1) geotechnical data for constructability assesement of the side-wall containment system;
- 2) only two sediment samples were collected from the former powerhouse discharge channel with no identified protocol for differentiating between PCBs associated with the landfill and those that may be attributable to other upstream sources;
- 3) no clear delineation of the property line exists and only limited soil characterization data; and,
- 4) no landfill gas characterization data, only limited leachate quality information.

U.S. EPA subsequently determined that a good-faith offer had not been received from Weyerhaeuser. The Agency decided to perform a limited pre-design investigation to address Weyerhaeuser's concern of full delineation of contamination in the former powerhouse discharge channel and the floodplain/wetlands area.

## **4.0 PRE-DESIGN INVESTIGATION**

On May 20, 2003, U.S. EPA issued a task order to Environmental Design, Inc. ("EDI") under the Superfund Technical Assistance Team Contract (Contract No. 68-S5-01-02, Task Order Number



3) to perform pre-design sampling and analysis activities at the 12<sup>th</sup> Street Landfill. On June 30, 2003 EDI submitted two draft documents: "Work Plan: Pre-Design Soil and Sediment Sampling 12<sup>th</sup> Street Landfill, Kalamazoo River Superfund Site, Operable Unit #04, Plainwell, Michigan" (EDI 2003a) and "Sample and Analysis Plan Pre-Design Soil and Sediment Sampling 12<sup>th</sup> Street Landfill, Kalamazoo River Superfund Site, Operable Unit #04, Plainwell, Michigan" (EDI 2003b). Both documents were approved by the Agency on July 16, 2003. Specifically, EDI was tasked to collect 153 soil/residual samples from the adjacent wetlands and woodlands, and 32 sediment samples from the powerhouse channel. The sampling and analysis included the 11 duplicate QA/QC samples.

### **Sampling Design Rationale**

Figure 4 presents the approximate locations of all sampling points included in this pre-design investigation. The intent of the sampling design for this investigation was to build upon previous investigations performed by BBL and MDEQ during the Remedial Investigation and to further define the extent of contamination required to be addressed in the RD/RA for the 12<sup>th</sup> Street Landfill. The sample design was created by the FIELDS Team using the FIELDS Geographic Information System ("GIS") software creating geographic positioning system ("GPS") coordinates.

Based upon the results of the previous investigations in the adjacent wetlands and the results from the April 2003, "Final (Revised), Ecological Risk Assessment (MDEQ 2003), and the January 2002, "Final (Revised) Human Health Risk Assessment" (MDEQ 2002), U.S. EPA identified areas requiring additional investigation to assess the extent of contamination. Samples from several locations sampled in the wetlands in 1993 and in 2001 were well above the threshold PCB concentration ranges recommended in the risk assessments. Using three locations (locations DB-3, DB-5, and DB-9) as centers, the FIELDS Team developed a radial sampling grid for the wetland area, resulting in 34 sampling locations within the wetlands. The radial design was based on distances of 32, 131 and 328 feet from the previously sampled locations. Sample location fp07 was located near an area observed by the MDEQ as a potential runoff area from the landfill.

No soil sampling had previously been performed in the woodlands between the landfill and the powerhouse discharge channel. Therefore, sample locations were spaced approximately 100 feet apart across the area to assess the extent of contamination in this area. Where appropriate, sample locations along the bank of the former powerhouse discharge channel were located adjacent to sediment sampling locations within the powerhouse discharge channel to evaluate erosion potential of PCB contaminated soils in this area.

Sediment sample locations in the former powerhouse discharge channel were chosen to provide four pieces of information: 1) locations were placed near the bank of the channel to evaluate the potential for PCB contamination from bank erosion; 2) locations sd10, sd11, and sd02 were placed to assess the potential for contamination migration from upstream sources; 3) location

sd01, sd09, sd15 and sd16 were placed to assess the possibility that contamination might have entered the former powerhouse discharge channel via hydraulic flow around the east bank of the powerhouse discharge channel; and, 4) samples were located in transects across the powerhouse discharge channel to assess the extent of contamination across width of the channel.

EDI was to gather composite samples at each location in the wetlands and woodlands from the following depth intervals: 0-6 inches, 6-12 inches, and 6 inches of native soil (12-24 inches). Sediment samples were to be collected from 0-6 inches and 6-12 inches.

### **September 2003 Field Activity Summary**

All pre-design sampling activities were performed by EDI, the U.S. EPA Region 5 FIELDS Team, and MDEQ personnel. EDI completed the sampling activities between September 15, 2003 and September 19, 2003. However, due to an error in sample delivery, approximately 50 samples arrived at the laboratory on September 22, 2003 at a temperature of approximately 20 degrees fahrenheit, exceeding the temperature criteria established in the sampling plan. EDI remobilized to the site on September 29<sup>th</sup> and 30<sup>th</sup> to resample the affected locations. Appendix 4 contains field notes, photographs and chain of custody forms, documenting the work performed. Except as noted below, all field activities were performed in accordance with the June 30, 2003, "Work Plan: Pre-Design Soil and Sediment Sampling 12<sup>th</sup> Street Landfill, Kalamazoo River Superfund Site, Operable Unit #04, Plainwell, Michigan", "Sample and Analysis Plan Pre-Design Soil and Sediment Sampling 12<sup>th</sup> Street Landfill, Kalamazoo River Superfund Site, Operable Unit #04, Plainwell, Michigan" and the September 5, 2003, "Health and Safety Plan".

U.S. EPA's FIELD Team personnel were on-site on September 11 and 12, 2003 to begin flagging sampling locations. Using an ATV and GPS unit the FIELD personnel navigated to the GPS coordinates of the sample locations (+/- 1 meter accuracy) determined in the sample design. The sample locations were marked with wooden stakes and colored surveyor tape marked with the appropriate sample ID. Using the ATV and dragging a boat to flatten cattails, the FIELDS Team created pathways through the floodplain to facilitate the sampling crew's access to the locations

On September 15, 2003, EDI personnel arrived on site, and along with U.S. EPA's FIELD Team personnel, performed a site walk through and general mobilization activities. EDI began sampling the flagged locations in the floodplains on September 16, 2003.

As required by the Sampling and Analysis Plan, EDI began sampling in the floodplains using 4 foot PVC Macrocore® liners vertically pushed into the soil under hand power or a modified slide hammer. However, because of low recovery volumes due to soil conditions only sample location fp19 was completed with this technique. Sample locations fp18, fp32, fp34, fp30, fp5, fp3, fp23, fp13, and fp12 all exposed sediment location (exp) samples were completed with a hand auger. The remaining floodplain samples were obtained using 3 inch wide lexan tubes.

The tubes were hand driven into the soil. Once the appropriate depth was reached a cork was placed in the top of the tube and the tube, along with the core extracted from the bore hole. Soils/residuals from the appropriated depths were collected in pre-cleaned laboratory appropriate (8 oz.) sample jars with no preservatives for analysis of PCBs. The sample jars were wide mouth glass containers with fitted screw tight teflon lined caps and filled to capacity. Appendix 5 contains the soil boring logs describing the lithology at each sample location.

Instream sediment sampling was performed by the FIELDS Team along with Weston personnel, EDI's subcontractor. Sampling personnel navigated in a small boat to the sample locations and marked the locations with anchored buoys or PVC tubing. Locations were then surveyed using the GPS unit. Sediment samples were collected using 6 foot lexan tubing, hand pushed into the sediment for sample retrieval.

Collected samples were labeled, preserved in a cooler with ice and shipped to Ceimic Corporation in Narragansett, Rhode Island for analysis, in accordance with the Sampling and Analysis Plan, June 2003. Quality assurance/quality control (QA/QC) samples were also supplied sample numbers. Chain-of-custody forms were used to track all samples from the time of sampling to the arrival of samples at the laboratory. QA/QC validation of the data was conducted by U.S. EPA using CADRE data validation software. All analytical results from this sampling event are reported in Table 1 and Table 2.

## **5.0 DATA RESULTS AND CONCLUSIONS/RECOMMENDATIONS**

The September 2003 sampling effort resulted in 159 soil/residual samples and 34 sediment samples being collected and analyzed for total PCBs. Figures 5 through 7 present the results in graphical format. Figure 5 presents those total PCB analytical results for samples from 0 -6 inches. Figure 6 presents those total PCB analytical results for samples from 6-12 inches. Figure 7 presents those total PCB analytical results for samples from 12-24 inches.

Appendix 1 to this report is the January 30, 2004, "FIELDS Team Contamination and Remediation Estimates of Soil and Sediment Surrounding the 12<sup>th</sup> Street Landfill", and should be reviewed for a complete statistical analysis of the data.. The FIELDS analyses included interpolation of the data both segregating data according to depth and by using the maximum PCB concentration at each sample location to estimate the area requiring remediation, estimated PCB mass removed, and the subsequent post-remediation PCB concentration. The FIELDS team generated an analysis based upon a range of PCB concentrations. The risk assessments recommend a range of threshold PCB concentrations for each media. The FIELDS analysis selected concentrations representative of these ranges. This analysis does not reflect a determination by U.S. EPA of the cleanup standards to be applied at this site. Due to the limitations of this study complete vertical profiling was not performed at each location resulting in potential underestimation of volumes, i.e samples were only collected from a maximum depth of 24 inches.

In summary, the FIELDS interpolation analysis shows that approximately 12,341 cubic yards of soil and sediment have PCB concentrations greater than 0.6 ppm and 3312 cubic yards with PCB concentrations above 4 ppm. An estimated 1,467 cubic yards of soil and sediment have PCB concentrations greater than 8 ppm. An estimated 153 cubic yards of soil and sediment have PCB concentration greater than 23 ppm.

Figure 6 of the FIELDS report depicts the areas with PCB concentrations above 0.6 ppm, 4 ppm, 8 ppm, 15 ppm, and 23 ppm, respectively. The interpolated areas exceeding 0.6 ppm PCB concentration generally correspond to the areas visually identified by the MDEQ as being contaminated. The area with PCB concentrations greater than 0.6 ppb generally extends approximately 100 feet into the wetlands area and extends along the north and west perimeter of the landfill and includes 97 percent of the mass of PCBs. In the woodland area the area with PCB concentrations exceeding 0.6 ppb is located around sampling locations exp13 and exp02 and extends to the eastern bank of the former powerhouse discharge channel. Sample location exp13 exhibited the highest PCB concentration in the woodlands with concentrations of 11.88 ppm, 16.47 ppm, and 8.76 ppm in the 0 to 6 inch, 6 to 12, and 12 to 24 depths respectively. The interpolated area with soils exceeding 4 ppm total PCBs encompasses a fourth of the volume of soils exceeding 0.6 ppm, but includes 61 percent of the mass of PCBs. The FIELDS analysis of post remediation concentrations show that if all soils below 4 ppm total PCBs are removed the remaining soils would have an average concentration of 0.6 ppm.

The data gathered during the Remedial Investigation and Pre-Design Investigations by BBL and MDEQ and this investigation have adequately delineated the extent of PCB contamination with the exception of two areas. One area requiring additional investigation would be the property to the southwest, which was not investigated due to access issues. The second area possibly warranting further investigation would be in the woodlands area near sample locations exp13 and exp02. Given the 100 foot spacing of the sample locations in the woodland area, a more concentrated sampling design might be appropriate to further define the area requiring remediation.

The concentrations of PCBs found in the former powerhouse discharge channel ranged between 7.7 ppm and 0.016 ppm with an average concentration of 0.44 total PCBs. PCBs were detected in all samples taken from the channel. Sediment location sd07 showed the highest PCB concentrations with 2.7 ppm in the 0 to 6 inch horizon and 7.7 ppm in the 6 to 12 inch horizon. This location generally corresponds the same area where the highest PCB concentrations were detected in the 2001 Predesign Investigation. Based on the MDEQ's visual observation of the channel sediments during their Pre-Design Investigation 2001 it would appear that paper waste residuals from the landfill have entered the channel through erosion. The highest concentration detected in the BBL's Pre-design Investigation of the sediments was 34 ppm with an average concentration of 2.4 ppm which is consistent with the results found in this study.

Sample locations sd10, sd11 and sd02 were located at the southern end of the powerhouse channel to assess if sources upstream of the landfill may be contributing to PCB concentrations

in the channel via leakage through the dam. Only low levels of PCBs were detected in these sample locations with the maximum PCB concentration being 1.53 ppm. These concentrations are consistent with concentrations detected throughout the channel. Given the visual evidence of paper residuals along the banks adjacent to the landfill and PCBs detected in soil samples along the banks of the channel, the landfill is the most likely source of sediment PCBs in the channel. However, with the potential for surface water flow around the northern end of the eastern bank of the channel it is not possible to conclude if the landfill is the sole source of these low level PCB concentrations.

These results seem to confirm the conclusions made in the MDEQ's ROD that within the wetlands, woodlands, and the former powerhouse discharge channel there is a limited area of soils/residuals and sediment that have migrated outside the landfill and require consolidation within the landfill. The areas requiring consolidation would be the soils/residuals within the wetlands along the north and west boundaries of the landfill extending less than 100 feet from the landfill. Figure 8, 9, and 10 visually present the 1993, 2001, and 2003 data together. In addition the soils/residuals between the landfill and western bank of the former powerhouse discharge channel would require consolidation, along with the instream sediments along the eastern bank of the channel.

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